

REMARKS

Applicants have amended the claims of the above-identified application, in order to further define various aspects of the present invention as described in the specification. Specifically, Applicants have cancelled original claims 1-3 without prejudice or disclaimer, and are adding new claims 4-11 to the application. Of these newly added claims, claims 4, 7, 10 and 11 are independent claims, and all of the newly added claims are directed to a method for manufacturing a semiconductor device.

Claims 4 and 7 recite that the method includes steps of forming a multilayer film including an insulation layer on a semiconductor substrate; forming a resist mask by patterning a resist applied on the multilayer film; etching the multilayer film using the resist mask; removing the resist mask after completing the etching; and processing the semiconductor substrate to create a trench, having an upper (end) portion, using the multilayer film having removed the resist as a mask. Claim 4 additionally recites that the step of processing the semiconductor substrate includes providing a roundness to the upper end portion of the trench by adhering a reaction product composed at least of the semiconductor substrate and a reaction gas to side wall portions of the multilayer film; and claim 7 further recites that the step of processing the semiconductor substrate includes providing a round-off processing to the upper portion of the trench of the semiconductor substrate, using a reaction gas including hydrogen. Claims 5 and 8, dependent respectively on claims 4 and 7, recite that the multilayer film includes at least a silicon nitride layer and a silicon oxide layer; and claims 6 and 9, dependent respectively on claims 4 and 7, recite that a desired round-off processing is performed by controlling reaction product,

gaseous species and gas flow rate to round off the upper portion or a bottom portion of the trench.

New independent claim 10 recites a method for manufacturing a semiconductor device, including forming the multilayer film including an insulation layer on a semiconductor substrate, subsequently patterning a resist to create a resist mask and subsequently etching the multilayer film, with the resist mask being subsequently removed, and also including subsequently first etching the semiconductor substrate by using a halogen system mixed gas, having as a mask the multilayer film having removed the resist mask, and subsequently second etching the semiconductor substrate by using a mixed gas including Cl_2 , O_2 and HBr and using the multilayer film as a mask, with a desired round-off processing being performed by controlling etching time and bias voltage of the first and second etchings.

New independent claim 11 recites a method including steps of forming a mask layer having openings corresponding to element isolation regions on a semiconductor substrate; etching the semiconductor substrate utilizing this mask layer as a mask, to form upper end portions of a trench in tapered shape, and etching the substrate utilizing this mask layer as a mask to form a main trench portion, with a desired round-off processing being performed by controlling etching time and bias voltage of the step of forming the tapered shape and the step of forming the main trench portion.

With respect to the newly added claims, note pages 4-8 of Applicants' specification.

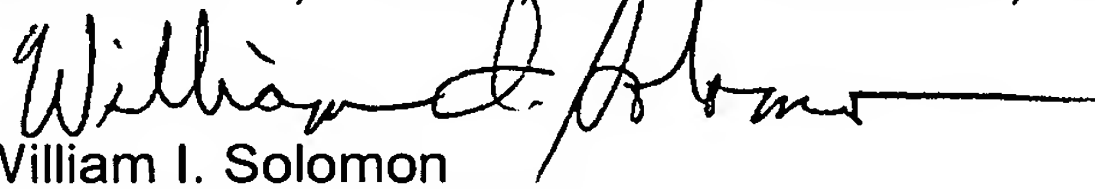
Entry of the present amendments, and, subsequent thereto, examination of

the above-identified application in due course, are respectfully requested.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account No. 01-2135 (Case No. 648.41969CX1), and please credit any excess fees to such Deposit Account.

Respectfully submitted,

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